

10 SEP 95 15:03:32

U.S. Patent &amp; Trademark Office

**P0001**

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10 SEP 95 15:03:40 U.S. Patent & Trademark Office

**P0002**

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FILE 'USPAT' ENTERED AT 15:03:41 ON 10 SEP 95
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*           WELCOME TO THE           *
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=> s newton  
L1 4133 NEWTON

=> s apple  
L2 6156 APPLE

=> s l2(p)l1  
L3 2 L2(P)L1

=> d l3

1. 5,428,805, Jun. 27, 1995, Method and apparatus for recognizing and performing handwritten calculations; Michael W. Morgan, 395/800; 345/173, 179; 364/231.2, 231.3, 231.31, 237.2, 237.5, 286.1, 286.3, DIG.1 [IMAGE AVAILABLE]

=> d l3 1-2

1. 5,428,805, Jun. 27, 1995, Method and apparatus for recognizing and performing handwritten calculations; Michael W. Morgan, 395/800; 345/173, 179; 364/231.2, 231.3, 231.31, 237.2, 237.5, 286.1, 286.3, DIG.1 [IMAGE AVAILABLE]

2. 5,125,959, Jun. 30, 1992, Method of thinning lateral flowers of apples; Toshihisa Suyama, et al., 504/253 [IMAGE AVAILABLE]

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15:04:38 COPY AND CLEAR PAGE, PLEASE  
10 SEP 95 15:04:44 U.S. Patent & Trademark Office P0003

US PAT NO: 5,428,805 [IMAGE AVAILABLE] L3: 1 of 2

DETDISC:

DETD(38)

The . . . computers are well known in the art, including such examples as Tandy Corporation's Grid unit, NCR Corporation's System 3125, and Apple Computer's **Newton** Personal Digital Assistant (PDA).

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US PAT NO: 5,428,805 [IMAGE AVAILABLE] L3: 1 of 2  
DATE ISSUED: Jun. 27, 1995  
TITLE: Method and apparatus for recognizing and performing  
handwritten calculations  
INVENTOR: Michael W. Morgan, 733 Sutton Dr., Walnut Creek, CA 94598  
APPL-NO: 07/994,950  
DATE FILED: Dec. 22, 1992  
INT-CL: [6] G06F 3/033; G06F 3/14; G06F 9/06  
US-CL-ISSUED: 395/800; 364/231.2, 231.3, 231.31, 237.2, 237.5, 286.3, 286.1;  
345/173, 179  
US-CL-CURRENT: 395/800; 345/173, 179; 364/231.2, 231.3, 231.31, 237.2, 237.5,

286.1, 286.3, DIG.1  
SEARCH-FLD: 395/800, 200, 146, 155, 149, 325, 500, 375, 775, 725, 152,  
153; 364/DIG.1, DIG.2, 709.11, 705.03, 705.02, 705.06,  
709.04, 710.03, 709.01; 340/706; 382/13, 14; 345/173, 179;  
178/18, 19

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10 SEP 95 15:05:08

U.S. Patent & Trademark Office

P0004

US PAT NO: 5,428,805 [IMAGE AVAILABLE]

L3: 1 of 2

DATE ISSUED: Jun. 27, 1995

TITLE: Method and apparatus for recognizing and performing  
handwritten calculations

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ART-UNIT: 232  
PRIM-EXMR: Alyssa H. Bowler  
ASST-EXMR: Daniel H. Pan  
LEGAL-REP: Merchant, Gould, Smith, Edell, Welter & Schmidt

## ABSTRACT:

A pen-based calculator recognizes handwritten input. The calculator comprises a display simulating a sheet of paper, and a stylus simulating a pen. The user writes a calculation on the calculator as if it were a piece of scratch paper. The calculator uses handwriting recognition to identify the various

10 SEP 95 15:05:10

U.S. Patent &amp; Trademark Office

P0005

US PAT NO: 5,428,805 [IMAGE AVAILABLE] L3: 1 of 2  
DATE ISSUED: Jun. 27, 1995  
TITLE: Method and apparatus for recognizing and performing  
handwritten calculations  
elements of the calculation, performs the calculation, and then displays the  
result at an appropriate location.  
46 Claims, 153 Drawing Figures

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US PAT NO: 5,125,959 [IMAGE AVAILABLE] L3: 2 of 2  
DATE ISSUED: Jun. 30, 1992  
TITLE: Method of thinning lateral flowers of apples  
INVENTOR: Toshihisa Suyama, Ryugasaki, Japan  
Kiyoshi Yokota, Morioka, Japan  
Shozo Kato, Fujisawa, Japan  
ASSIGNEE: Tokuyama Soda Kabushiki Kaisha, Tokuyama, Japan (foreign  
corp.)  
APPL-NO: 07/651,952  
DATE FILED: Feb. 7, 1991  
INT-CL: [5] A01N 43/40; A01N 43/56  
US-CL-ISSUED: 71/92, 65  
US-CL-CURRENT: 504/253  
SEARCH-FLD: 71/92  
REF-CITED:

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63-174905 7/1988 Japan

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ART-UNIT: 129

PRIM-EXMR: Richard L. Raymond

ASST-EXMR: S. Mark Clardy

LEGAL-REP: Sherman and Shalloway

## ABSTRACT:

A method of thinning lateral flowers of apples, comprising applying of flower thinning effective amount of a pyrazole compound represented by general formula (I) ##STR1## wherein R.sub.1 represents an alkyl group having 1 to 4 carbon atoms; and

R.sub.2 and R.sub.3, which are the same or different, each represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, to flowers of apples. A compound in which R.sub.1 and R.sub.2 are each a methyl group, and R.sub.3 is a hydrogen atom is preferred. The pyrazole compounds are applied at a flowering stage of apples, preferably in a period from immediately after full bloom to terminal flowers of apples to 2 days thereafter, typically in a proportion of from about 5 mg to about 75 g per tree at a coverage in a range of from about 20 mg/10a to about 2,000 g/10a.

8 Claims, No Drawings

10 SEP 95 15:05:39

U.S. Patent &amp; Trademark Office

P0006

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(FILE 'USPAT' ENTERED AT 15:03:41 ON 10 SEP 95)

SET PAGELength 62

SET LINELENGTH 78

L1 4133 S NEWTON

L2 6156 S APPLE

L3 2 S L2(P)L1

=&gt; d l3 1-2

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2. 5,125,959, Jun. 30, 1992, Method of thinning lateral flowers of apples; Toshihisa Suyama, et al., 504/253 [IMAGE AVAILABLE]

=&gt; s handwrit####(6a)NUMBER#

1813 HANDWRIT####

1004669 NUMBER#

L4 128 HANDWRIT####(6A)NUMBER#

=&gt; s apple##

L5 8009 APPLE##

=&gt; s l5(p)l1

L6 2 L5(P)L1

=&gt; s messagepad

L7

0 MESSAGEPAD

=&gt; d 14 1-128

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- 10 SEP 95 15:12:17 U.S. Patent & Trademark Office P0011
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88. 4,715,621, Dec. 29, 1987, Numeric color coded filing system; William Colavito, et al., 283/36; 40/359; 283/114 [IMAGE AVAILABLE]
89. 4,703,511, Oct. 27, 1987, Writing input and dynamics regeneration device; Paul Conoval, 382/182; 347/171; 382/119, 232 [IMAGE AVAILABLE]
90. 4,672,677, Jun. 9, 1987, Character and figure processing apparatus; Tadashi Yamakawa, 382/185; 178/18; 382/187, 309, 315 [IMAGE AVAILABLE]
91. 4,653,107, Mar. 24, 1987, On-line recognition method and apparatus for a handwritten pattern; Hiroshi Shojima, et al., 382/189, 197, 202 [IMAGE AVAILABLE]
92. 4,648,067, Mar. 3, 1987, Footnote management for display and printing; James T. Repass, et al., 395/148; 364/DIG.2; 395/144 [IMAGE AVAILABLE]
- 10 SEP 95 15:12:40 U.S. Patent & Trademark Office P0012
93. 4,634,148, Jan. 6, 1987, Negotiable instrument; Edwin B. Greene, 283/70; 235/468; 283/58, 92, 901 [IMAGE AVAILABLE]
94. 4,602,128, Jul. 22, 1986, Automatic redialing arrangement for multi-line telephone station sets; Glen G. Freundlich, 379/200, 127, 355 [IMAGE AVAILABLE]
95. 4,588,211, May 13, 1986, Machine readable document; Edwin B. Greene, 283/70; 235/468; 283/57, 58, 901 [IMAGE AVAILABLE]
96. 4,563,758, Jan. 7, 1986, Underwater communicator; Charles J. Paternostro, 367/132; 128/201.19, 201.27; 364/413.31; 367/134; 381/51; 395/2 [IMAGE AVAILABLE]

97. 4,461,029, Jul. 17, 1984, Automatic handwritten and typewritten character-reading device; Jan F. van Bilzem, et al., 382/203, 228, 254 [IMAGE AVAILABLE]

98. 4,454,610, Jun. 12, 1984, Methods and apparatus for the automatic classification of patterns; George C. Sziklai, 382/119; 235/380, 494; 340/825.34; 382/280 [IMAGE AVAILABLE]

99. 4,394,651, Jul. 19, 1983, Eastern Arabic number display; Michael Frankston, et al., 345/33, 142 [IMAGE AVAILABLE]

100. 4,354,063, Oct. 12, 1982, Telephone handset with illuminated magnifier; James M. Kuka, 379/433; 362/88; D14/248; D16/135 [IMAGE AVAILABLE]

101. 4,353,555, Oct. 12, 1982, Duplicate bridge scoring system; Frederick H. Flam, 273/148R, 151 [IMAGE AVAILABLE]

102. 4,308,522, Dec. 29, 1981, Identity verification apparatus and method; Bruno J. Paganini, et al., 382/123, 209 [IMAGE AVAILABLE]

103. 4,261,126, Apr. 14, 1981, Numeric display; Krikor A. Bezjian, 40/447, 452; 283/117; 345/34; 400/83, 111; D18/25 [IMAGE AVAILABLE]

104. 4,232,290, Nov. 4, 1980, Handwritten character identification; Syoichi Yasuda, et al., 382/187 [IMAGE AVAILABLE]

105. 4,201,978, May 6, 1980, Document processing system; Robert B. Nally, 382/140; 235/379; 382/311, 320 [IMAGE AVAILABLE]

106. 4,177,448, Dec. 4, 1979, Character recognition system and method multi-bit curve vector processing; Robert K. Brayton, 382/160, 203, 316 [IMAGE AVAILABLE]

107. 4,155,072, May 15, 1979, Character recognition apparatus; Ryuichi Kawa, 382/186, 196, 224, 295, 296, 298 [IMAGE AVAILABLE]

108. 4,136,261, Jan. 23, 1979, Automatic answering device in facsimile; Tasaku Wada, 379/100; 358/301, 435, 440; 360/2, 81 [IMAGE AVAILABLE]

109. 4,067,431, Jan. 10, 1978, Combinational keyboard with movable keys and adapted for one-handed keying of numerical information; Randal O. Whitaker, 400/485; 341/27; 400/492, 495 [IMAGE AVAILABLE]

110. 4,039,761, Aug. 2, 1977, Electronic apparatus for the permanent storage and automatic dialing of telephone numbers; Jean-Daniel Nicoud, et al.,  
10 SEP 95 15:13:04 U.S. Patent & Trademark Office P0013  
379/354, 355 [IMAGE AVAILABLE]

111. 4,024,500, May 17, 1977, Segmentation mechanism for cursive script character recognition systems; Noel Martin Herbst, et al., 382/178 [IMAGE AVAILABLE]

112. 3,999,161, Dec. 21, 1976, Method and device for the recognition of characters, preferably of figures; Jan Frederik van Bilzem, et al., 382/203, 293 [IMAGE AVAILABLE]

113. 3,979,722, Sep. 7, 1976, Automatic character recognition device

- employing dynamic programming; Hiroaki Sakoe, 382/215, 197 [IMAGE AVAILABLE]
114. 3,962,679, Jun. 8, 1976, Handwriting identification technique; Rudolf Succo Engelbrecht, 382/122; 178/18; 361/225 [IMAGE AVAILABLE]
115. 3,848,112, Nov. 12, 1974, IDENTIFICATION SYSTEM; Theodore E. Weichselbaum, et al., 235/375; 283/70, 74, 900; 364/413.02 [IMAGE AVAILABLE]
116. 3,824,546, Jul. 16, 1974, PATTERN RECOGNIZING SYSTEMS; Harumi Kawasaki, et al., 382/206, 323 [IMAGE AVAILABLE]
117. 3,810,188, May 7, 1974, FREQUENCY DEVIATION COMPENSATION SYSTEM; T. A. O. Gross, et al., 346/33MC; 178/19; 346/33M; 360/27 [IMAGE AVAILABLE]
118. 3,795,894, Mar. 5, 1974, METHOD AND APPARATUS FOR COMPARISON; Arthur Klemt, 382/223 [IMAGE AVAILABLE]
119. 3,789,361, Jan. 29, 1974, RECOGNITION SYSTEM AND PROCESSOR; Edward Cortez, 382/226 [IMAGE AVAILABLE]
120. 3,715,570, Feb. 6, 1973, IDENTIFICATION SYSTEM; Theodore E. Weichselbaum, et al., 235/449; 360/1, 40, 93 [IMAGE AVAILABLE]
121. 3,673,708, Jul. 4, 1972, MULTISENSORY TEACHING APPARATUS; Darwin K. Bevens, 434/164 [IMAGE AVAILABLE]
122. 3,639,903, Feb. 1, 1972, METHOD OF AND AUTOMATIC SYSTEM FOR RECOGNITION OF OBJECTS BY THEIR CONTOUR REPRESENTATIONS; Rimantas Alfonso Nashljunas, et al., 382/203, 192 [IMAGE AVAILABLE]
123. 3,628,255, Dec. 21, 1971, APPARATUS FOR TEACHING OR TESTING AN APPLICANT; John R. Golden, 434/325 [IMAGE AVAILABLE]
124. 3,622,995, Nov. 23, 1971, AUTOMATIC TICKET/CREDIT CARD CHECK-IN SYSTEM; Uselma Clarke S. Dilks, et al., 235/382; 364/407; 379/91 [IMAGE AVAILABLE]
125. 3,604,799, Sep. 14, 1971, FILM RECORD CARD SYSTEM; Thomas P. Anderson, 355/79; 40/159.2; 355/77; 430/151; D19/75 [IMAGE AVAILABLE]
126. 3,587,045, Jun. 22, 1971, SYSTEM FOR EXTRACTING FEATURES OF LINES OF A PATTERN; Nobuyuki Tanaka, et al., 382/200 [IMAGE AVAILABLE]
127. 3,582,956, Jun. 1, 1971, APPARATUS FOR RECORDING AND REPRODUCING HANDWRITING; Harvey L. Huston, et al., 346/33M; 178/18; 318/568.1; 346/33MC; 360/79 [IMAGE AVAILABLE]
128. 3,582,883, Jun. 1, 1971, READING APPARATUS; David H. Shepard, et al., 382/206 [IMAGE AVAILABLE]
- 10 SEP 95 15:13:27 U.S. Patent & Trademark Office P0014

=> d his

(FILE 'USPAT' ENTERED AT 15:03:41 ON 10 SEP 95)

SET PAGELENGTH 62

SET LINELENGTH 78

L1 4133 S NEWTON

L2 6156 S APPLE

L3 2 S L2(P)L1  
L4 128 S HANDWRIT####(6A)NUMBER#  
L5 8009 S APPLE##  
L6 2 S L5(P)L1  
L7 0 S MESSAGEPAD

=> d 14 3 kwic

US PAT NO: 5,434,928 [IMAGE AVAILABLE]

L4: 3 of 128

DEIDESC:

DETD(39)

"length" represents the **number** of elements in the **handwriting** records, as described previously.

=> d 14 4 kwic

US PAT NO: 5,426,711 [IMAGE AVAILABLE]

L4: 4 of 128

SUMMARY:

BSUM(13)

Particularly, **handwritten** character samples that include variation in **number** of strokes and stroke order are gathered, and the stroke characteristic amount of each sample is expressed by bits in. . .

DEIDESC:

DETD(3)

Incidentally, . . . number of strokes or the number of most frequent strokes is used. Due to this, the narrowing of candidates by **number** of strokes becomes more appropriate for **handwritten** characters, and thus the narrowing can be accurately performed.

DEIDESC:

DETD(10)

The . . . the dictionary. Here, a description is given of a method for creating one dictionary character for one character category. First, **handwritten** character samples that include variations in **number** of strokes and stroke order are collected for the character to be recognized, and the characteristic amounts of all the. . .

DEIDESC:

DETD(16)

Incidentally, the threshold value for judgment through comparison with E is

=>

=> d 14 5 kwic

US PAT NO: 5,422,468 [IMAGE AVAILABLE]

L4: 5 of 128

DETD(14)

DETD(14)

FIG. . . . store's identifying information 904 is either similarly previously stamped on the formset or pre-printed. In such forms a credit authorization **number** is **handwritten** 905. Additionally while a place is reserved for entering the cardholder's driver's license number 906, in practice this is seldom. . . .

=&gt; d 14 6 kwic

US PAT NO: 5,418,865 [IMAGE AVAILABLE]

L4: 6 of 128

DETD(32)

DETD(32)

FIG. . . . bands near the top and the bottom, various other fields, designated 43 and 45, that either contain information or accept **handwritten** information, and a **number** of mark-sense fields 47a-47d. The mark-sense fields allow the user to input information by placing marks in some fields and. . . .

=&gt; d 14 11 kwic

US PAT NO: 5,396,566 [IMAGE AVAILABLE]

L4: 11 of 128

SUMMARY:

BSUM(6)

There are a **number** of patents and articles directed to **handwriting** recognition, each having certain advantages and disadvantages.

=&gt; d 14 14 kwic

10 SEP 95 15:20:56

U.S. Patent &amp; Trademark Office

P0016

US PAT NO: 5,365,598 [IMAGE AVAILABLE]

L4: 14 of 128

DETD(39)

DETD(39)

As . . . noted that each user will have his or her own particular style of writing a Handwritten Symbol and that each **Handwritten** Symbol may have a **number** of different variations.

=&gt; d 14 16 kwic

US PAT NO: 5,359,671 [IMAGE AVAILABLE]

L4: 16 of 128

DETD(5)

DETD(5)

FIG. . . . diagrammatically shows a bit-map 30 of the type that would be obtained as a result of scanning a printed or **handwritten** character "A" at a large **number** of pixel locations. Bit-map 30 is represented here as a rectangular array of pixel locations arranged in columns x and. . .

=> d 14 20 kwic

US PAT NO: 5,333,209 [IMAGE AVAILABLE]

L4: 20 of 128

SUMMARY:

BSUM(4)

With . . . to recognize characters or symbols for further processing and for such recognition to proceed on line in real time. A **number** of prior-art methods of recognizing **handwritten** symbols have relied on recognizing features in the symbols, for example, ascenders, descenders, closure of letters, dotting of i's and. . .

=> d 14 25 kwic

US PAT NO: 5,307,423 [IMAGE AVAILABLE]

L4: 25 of 128

SUMMARY:

BSUM(10)

The invention can represent information other than ZIP codes. One such application relates to bank checks. Most personal checks are **handwritten**. Although bank codes, accounting and check **number** information is normally pre-printed in machine-readable format, the handwritten "dollar amount" information on the check has to be manually processed. . .

DETD(8)

DETD(8)

Each . . . used with pens, pencils, or label printing (e.g., pale orange). The segments 25 are meant to receive the inscription of **handwritten** letters, **numbers**, symbols, etc., but the segments do not appear in an electronic image used during character recognition because of

10 SEP 95 15:22:07 U.S. Patent & Trademark Office P0017

US PAT NO: 5,307,423 [IMAGE AVAILABLE]

L4: 25 of 128

DETD(8)

the special. . .

DETD(9)

DETD(9)

Appropriate . . . or over-writing some or all of the lightly printed lines 25 of each entry guide outline 2 is used to **handwrite** ZIP code **numbers** that are easily recognized by machine. Even where the ZIPWrite graphic is not machine-read, there will be fewer human errors. . .

=> d 14 28 kwic

US PAT NO: 5,287,417 [IMAGE AVAILABLE]

L4: 28 of 128

SUMMARY:

BSUM(4)

Handwriting . . . lines appear as they are written until the pen is lifted from the tablet. After a predetermined time period, the **handwritten** lines are recognized as letters, symbols, **numbers**, or graphical shapes.

=> d 14 30 kwic

US PAT NO: RE 34,476 [IMAGE AVAILABLE]

L4: 30 of 128

DETD(67)

DETD(67)

While . . . get Mr. Hansen's address and the phone number of a subordinate contact he suggests. While the address is entered in **handwritten** form, the user will enter the **number** digitally using the Tel-Assist button because it's easily done with the button keys and will thus be operational.

DETD(84)

DETD(84)

The . . . upper two-thirds of the Letter Pad is reserved for handwriting while the bottom one-third features a scrolling typing window. The **handwriting** portion can be used in a **number** of ways. As a topic list, entries can be ordered (by moving the graphic entries around) into an outline for. . .

=> d 14 36 kwic

US PAT NO: 5,239,592 [IMAGE AVAILABLE]

L4: 36 of 128

SUMMARY:

BSUM(10)

Further, . . . horizontally written in advance, it is necessarily  
10 SEP 95 15:23:55 U.S. Patent & Trademark Office P0018

US PAT NO: 5,239,592 [IMAGE AVAILABLE]

L4: 36 of 128

BSUM(10)

possible to detect the numeral by forming the histogram of the horizontal dot **number**. However, a **handwritten** bar is not always horizontal and moreover the length of the bar varies in accordance with the size of the. . .

CLAIMS:

CLMS(9)

9. . . . block into plural areas  $Z(i, j)$  ( $i=0.about.m, j=0.about.n$ ); counting a number of vertical masks which are vertical components forming the **handwritten** characters; counting a **number** of incline masks which are incline components and counting a number of horizontal masks which are horizontal components for each. . .

=&gt; d 14 51 kwic

US PAT NO: 5,149,919 [IMAGE AVAILABLE]

L4: 51 of 128

PARENT-CASE:

This . . . be in sufficient proximity to the touch overlay for positions between strokes to be recorded in the tracking mode. Thus **handwriting** recognition would have a great **number** of unintended strokes.

As discussed in U.S. Pat. No. 4,686,332, the conductors in the touch overlay are approximately 0.025. . .

=&gt; d 14 55 kwic

US PAT NO: 5,121,441 [IMAGE AVAILABLE]

L4: 55 of 128

DETD(4)

DETD(4)

It should also be realized that the teaching of the invention is applicable to the recognition of a **number** of **handwritten** symbols wherein a given symbol is composed of at least one stroke. By employing the teaching of the invention the. . .

=&gt; d 14 60 kwic

US PAT NO: 5,097,517 [IMAGE AVAILABLE]

L4: 60 of 128

DETD(5)

DETD(5)

FIG. . . . his zeros, ones, twos, threes, etc. . . is stored in local memory 335 and associated with the maker's account **number**. Thus, the system automatically verifies the **handwriting** of the maker. Instead of being a local memory of features of templates (described more fully hereafter) associated with the. . .

=&gt; d 14 65 kwic

10 SEP 95 15:25:43

U.S. Patent &amp; Trademark Office

P0019

US PAT NO: 5,058,182 [IMAGE AVAILABLE]

L4: 65 of 128

SUMMARY:

BSUM(4)

Optical . . . Recognition 19, 1 (1986), 15-19 and Lam, L. and Suen, C. Y., "Structural Classification and Relaxation Matching of Totally Unconstrained **Handwritten** ZIP Code **Numbers**", Pattern Recognition 21, 1 (1988), 19-31.

=> d 14 68 kwic

US PAT NO: 5,034,989 [IMAGE AVAILABLE]

L4: 68 of 128

SUMMARY:

BSUM(4)

To . . . table. The look-up table stores a plurality of variations of each of the predetermined primitives to accommodate variations in user's **handwriting**. Due to the large **number** of variations of each primitive stored in the table, the primitives forming the character are usually determined by the device.. . .

=> d 14 74 kwic

US PAT NO: 4,971,560 [IMAGE AVAILABLE]

L4: 74 of 128

SUMMARY:

BSUM(11)

The . . . single task attention span of a student at any given age. A student typically develops sufficient motor skills to copy **handwritten numbers** from one page to another page between the ages of 4 years and 6 years. A maximum full attention span. . .

=> d 14 75 kwic

US PAT NO: 4,960,981 [IMAGE AVAILABLE]

L4: 75 of 128

DETDISC:

DETD(6)

Referring . . . field 42 for receiving, by handwritten entry, the amount of a transaction, and a second field 44 for receiving, by **handwritten** entry, the account **number** of the other party to the transaction, e.g., the payee (seller). Another field 46 receives the handwritten signature of the. . .

=> d 14 83 kwic

US PAT NO: 4,751,741 [IMAGE AVAILABLE]

L4: 83 of 128

DETDISC:

10 SEP 95 15:27:21

U.S. Patent & Trademark Office

P0020

US PAT NO: 4,751,741 [IMAGE AVAILABLE]

L4: 83 of 128

DETD(5)

FIG. . . . recognizing mode. The section 18 stores various standard patterns corresponding to, e.g., letters, numerals, symbols and the like and stroke **numbers** required for **handwriting** them, and supplies the storage data to the section 19. The section 19 compares the data written in the section. . .

=> d l4 89 kwic

US PAT NO: 4,703,511 [IMAGE AVAILABLE]

L4: 89 of 128

SUMMARY:

BSUM(7)

All . . . handwriting velocity. Furthermore, prior art stylus input devices discard much useful information since they are responsive only to a small **number** of **handwriting** parameters.

=> d his

(FILE 'USPAT' ENTERED AT 15:03:41 ON 10 SEP 95)

SET PAGELength 62

SET LINELENGTH 78

L1 4133 S NEWTON  
L2 6156 S APPLE  
L3 2 S L2(P)L1  
L4 128 S HANDWRIT####(6A)NUMBER#  
L5 8009 S APPLE##  
L6 2 S L5(P)L1  
L7 0 S MESSAGEPAD

=> s recogniz####(4a)number#

222093 RECOGNIZ####

1004669 NUMBER#

L8 4149 RECOGNIZ####(4A)NUMBER#

=> s handwrit####

L9 1813 HANDWRIT####

=> s l8(p)l9

L10 16 L8(P)L9

=> d l10 1-16

1. 5,416,308, May 16, 1995, Transaction document reader; Ernest J. Hood, et al., 235/454, 456; 382/317 [IMAGE AVAILABLE]

2. 5,367,453, Nov. 22, 1994, Method and apparatus for correcting words; Stephen P. Capps, et al., 364/419.13, 419.15; 382/310 [IMAGE AVAILABLE]

3. 5,347,295, Sep. 13, 1994, Control of a computer through a position-sensed stylus; Todd Agulnick, et al., 345/156, 179 [IMAGE AVAILABLE]

10 SEP 95 15:29:58

U.S. Patent & Trademark Office

P0021

4. 5,341,438, Aug. 23, 1994, Method and apparatus for segmenting and classifying unconstrained handwritten characters; Daniel Clifford, 382/179, 187 [IMAGE AVAILABLE]

5. 5,321,768, Jun. 14, 1994, System for recognizing handwritten character strings containing overlapping and/or broken characters; Richard K. Fenrich, et al., 382/178, 179 [IMAGE AVAILABLE]
6. 5,307,423, Apr. 26, 1994, Machine recognition of handwritten character strings such as postal zip codes or dollar amount on bank checks; Om P. Gupta, et al., 382/182; 235/379, 462; 382/102, 138 [IMAGE AVAILABLE]
7. 5,287,417, Feb. 15, 1994, Method and system for recognizing a graphic object's shape, line style, and fill pattern in a pen environment; Marlin Eller, et al., 382/276, 181, 199, 293; 395/133, 137 [IMAGE AVAILABLE]
8. 5,267,332, Nov. 30, 1993, Image recognition system; Mark A. Walch, et al., 382/198, 204, 242, 259 [IMAGE AVAILABLE]
9. 5,253,304, Oct. 12, 1993, Method and apparatus for image segmentation; Yann A. LeCun, et al., 382/102, 174 [IMAGE AVAILABLE]
10. 5,237,628, Aug. 17, 1993, System and method for automatic optical data entry; Arthur C. Levitan, 382/175, 186, 318 [IMAGE AVAILABLE]
11. 4,860,372, Aug. 22, 1989, Real time handwritten character input system; Soshiro Kuzunuki, et al., 382/189; 178/18; 345/104, 146, 157; 382/177 [IMAGE AVAILABLE]
12. 4,653,107, Mar. 24, 1987, On-line recognition method and apparatus for a handwritten pattern; Hiroshi Shojima, et al., 382/189, 197, 202 [IMAGE AVAILABLE]
13. 4,632,252, Dec. 30, 1986, Mail sorting system with coding devices; Kazuhito Haruki, et al., 209/546, 584, 900; 364/478; 382/102 [IMAGE AVAILABLE]
14. 4,379,288, Apr. 5, 1983, Means for encoding ideographic characters; Daniel L. Leung, et al., 341/28; 400/110, 484 [IMAGE AVAILABLE]
15. 4,201,978, May 6, 1980, Document processing system; Robert B. Nally, 382/140; 235/379; 382/311, 320 [IMAGE AVAILABLE]
16. 4,155,072, May 15, 1979, Character recognition apparatus; Ryuichi Kawa, 382/186, 196, 224, 295, 296, 298 [IMAGE AVAILABLE]

=> d 110 8 kwic

US PAT NO: 5,267,332 [IMAGE AVAILABLE]

L10: 8 of 16

DETDSC:

DETD(3)

The ensuing pages present a description of a software system designed to provide a rapid and accurate means of recognizing characters, numbers, symbols and other items within electronically scanned images. The system employs unique image analysis and storage techniques which enable it. . . that it can identify the same or similar images. The system is revolutionary in that it can reliably interpret both handwritten and printed characters

10 SEP 95 15:30:41

U.S. Patent &amp; Trademark Office

P0022

US PAT NO: 5,267,332 [IMAGE AVAILABLE]

L10: 8 of 16

DETD(3)

and symbols while not requiring any specialized hardware. Also, its capabilities are not limited by individual **handwriting** styles or stylistic features of printed fonts.

=&gt; d l10 11 kwic

US PAT NO: 4,860,372 [IMAGE AVAILABLE]

L10: 11 of 16

DETD(10)

DETD(10)

The character input buffer area 10 is an area where **handwritten** characters are written and **recognized** characters are displayed. The **number** of buffers are 7 corresponding to the same number of characters (B1 to B7).

=&gt; d l10 2 kwic

US PAT NO: 5,367,453 [IMAGE AVAILABLE]

L10: 2 of 16

DETD(32)

DETD(32)

In . . . object W. Many word recognition systems have the ability to provide not only the word recognizer's first choice for a **recognized** word, but also a **number** of alternative choices. These alternative choices are ranked by the word recognizer as to their likelihood of being correct. For. . . U.S. patent application Ser. No. 08/099,847, filed Jul. 30. 1993 on behalf of Beernink et al., entitled "Method for Correcting **Handwritten** on a Pen-Based Computer", assigned to the assignee of the present invention, the disclosure of which is incorporated herein by. . .

=&gt; d l10 5 kwic

US PAT NO: 5,321,768 [IMAGE AVAILABLE]

L10: 5 of 16

SUMMARY:

BSUM(6)

Another method for recognizing **handwritten** text involves a method for **recognizing** strings of **numbers**. See R. Fenrich and S. Krishnamoorthy, "Segmenting Diverse Quality **Handwritten** Digit Strings in Near Real Time," United States Postal Service Advanced Technology Conference, 1990. This method was designed particularly for use in the recognition of **handwritten** numbers in ZIP Codes on mail pieces. Because the number of digits in any ZIP Code necessarily is five or. . .

=&gt; d l10 7 kwic

US PAT NO: 5,287,417 [IMAGE AVAILABLE]

L10: 7 of 16

## SUMMARY:

10 SEP 95 15:32:36

U.S. Patent &amp; Trademark Office

P0023

US PAT NO: 5,287,417 [IMAGE AVAILABLE]

L10: 7 of 16

BSUM(4)

Handwriting recognition systems allow users to input handwritten data into a computer. The user writes data on an electronic tablet with a special pen, and as the user . . . lines appear as they are written until the pen is lifted from the tablet. After a predetermined time period, the handwritten lines are recognized as letters, symbols, numbers, or graphical shapes.

=&gt; d 110 13 kwic

US PAT NO: 4,632,252 [IMAGE AVAILABLE]

L10: 13 of 16

DEIDESC:

DEID(3)

Each . . . sorter includes reading device or section 11 which scans postal mail to read the zip code or address printed or handwritten on the mail. Reading section 11 is a conventional reading device except for waiting path 115, which is described in further detail below. Recognition unit 12 is a conventional recognition unit that recognizes each number or character forming the zip code from the image data obtained by reading section 11. Sorting device or section 13. . .

=&gt; d 110 10 kwic

US PAT NO: 5,237,628 [IMAGE AVAILABLE]

L10: 10 of 16

DEIDESC:

DEID(13)

An . . . FIG. 2, the recognition engine 20' of FIG. 4 comprises the machine printed character optical recognizer 22 and the offline handwritten character optical recognizer 24. However, in some cases the optical recognizer 24 cannot recognize all of the handwritten characters. If some handwritten characters in a form cannot be recognized by the optical recognizer 24, the correlator 28 can be utilized to compare the handwritten characters which are recognized with a database to enhance the recognition probability of the unrecognized handwritten characters. For example, suppose that the handwritten character optical recognizer 24 recognizes numbers but not letters in a particular form. In this case, a handwritten social security number can be recognized and the correlator 28 can be utilized to compare the recognized social security number to a database to enhance the recognition probability of handwritten information composed of letters such as a person's name.

=&gt; d 110 6 kwic

US PAT NO: 5,307,423 [IMAGE AVAILABLE]

L10: 6 of 16

DETDESC:

DETD(9)

Appropriate . . . or over-writing some or all of the lightly printed  
10 SEP 95 15:34:28 U.S. Patent & Trademark Office P0024

US PAT NO: 5,307,423 [IMAGE AVAILABLE] L10: 6 of 16

DETD(9)

lines 25 of each entry guide outline 2 is used to **handwrite** ZIP code  
**numbers** that are easily **recognized** by machine. Even where the ZIPWrite  
graphic is not machine-read, there will be fewer human errors due to the  
LCD-type, . . .

=&gt; d his

(FILE 'USPAT' ENTERED AT 15:03:41 ON 10 SEP 95)

SET PAGELength 62

SET LINELENGTH 78

L1 4133 S NEWTON  
L2 6156 S APPLE  
L3 2 S L2(P)L1  
L4 128 S HANDWRIT####(6A)NUMBER#  
L5 8009 S APPLE##  
L6 2 S L5(P)L1  
L7 0 S MESSAGEPAD  
L8 4149 S RECOGNIZ####(4A)NUMBER#  
L9 1813 S HANDWRIT####  
L10 16 S L8(P)L9

=&gt; s pda or (personal digital assistant)

1039 PDA  
28642 PERSONAL  
165288 DIGITAL  
5372 ASSISTANT  
7 PERSONAL DIGITAL ASSISTANT  
(PERSONAL(W)DIGITAL(W)ASSISTANT)  
L11 1041 PDA OR (PERSONAL DIGITAL ASSISTANT)

=&gt; s l11 not pda

1039 PDA  
L12 2 L11 NOT PDA

=&gt; d l12 1-2

1. 5,408,147, Apr. 18, 1995, VCC translator circuit; Roy L. Yarbrough, et  
al., 326/68, 121 [IMAGE AVAILABLE]

2. 5,381,061, Jan. 10, 1995, Overvoltage tolerant output buffer circuit;  
Jeffrey B. Davis, 326/57, 68, 121; 327/534 [IMAGE AVAILABLE]

=&gt; s l9 and l11

L13 4 L9 AND L11

=&gt; d l13 1-4

1. 5,428,805, Jun. 27, 1995, Method and apparatus for recognizing and performing **handwritten** calculations; Michael W. Morgan, 395/800; 345/173, 179; 364/231.2, 231.3, 231.31, 237.2, 237.5, 286.1, 286.3, DIG.1 [IMAGE AVAILABLE]
2. 5,417,222, May 23, 1995, Patient monitoring system; Michael K. Dempsey, et al., 128/696, 903 [IMAGE AVAILABLE]
3. 4,516,174, May 7, 1985, Video signal regulating apparatus; Yoshiaki  
10 SEP 95 15:37:08 U.S. Patent & Trademark Office P0025  
Kamoto, 358/446, 474; 382/274 [IMAGE AVAILABLE]
4. 4,365,274, Dec. 21, 1982, One-dimensional image sensor; Mutsuo  
Takenouchi, et al., 358/482, 494; 437/220 [IMAGE AVAILABLE]

=> d l13 2 kwic

US PAT NO: 5,417,222 [IMAGE AVAILABLE]

L13: 2 of 4

ABSTRACT:

A . . . patient monitoring which interfaces a telemetry monitor with a standard portable computer (such as a laptop computer, palmtop computer or **personal digital assistant**) with the display and the keyboard or other device of the portable computer being utilized to provide both display and.

SUMMARY:

BSUM(11)

The . . . carried by a doctor or nurse at the end of the rounds or from transcription and manual data entry of **handwritten** notes taken by such medical personnel during rounds, and would therefore improve patient care and reduce the likelihood of errors. . .

SUMMARY:

BSUM(14)

In . . . monitors with a standard portable computer such as a laptop computer, palmtop computer (for example the Hewlett Packard 100LX), or **personal digital assistant (PDA)** with the display and the input keyboard (and/or other input device) of the portable computer being utilized to provide both. . . be displayed on its display. Since some medical personnel already carry a portable processor such as a palmtop computer or **PDA** at all times, this interfacing capability greatly expands the usefulness of the telemetry monitor without significantly increasing its size, weight,. . .

DETDSC:

DETD(9)

The . . . in store 36 as the readings are being taken rather than storing such information on the charting device or as **handwritten** notes and later either downloading or transcribing such information. Particularly if the

storage capabilities of the portable processor being utilized. . .

DETDESC:

DETD(13)

Keyboard . . . other purposes, eliminating the need for a substantial storage capability in portable processor 12 and eliminating the need to transcribe **handwritten** notes.

=> d l13 4 kwic

US PAT NO: 4,365,274 [IMAGE AVAILABLE] L13: 4 of 4  
10 SEP 95 15:37:53 U.S. Patent & Trademark Office P0026

US PAT NO: 4,365,274 [IMAGE AVAILABLE] L13: 4 of 4

SUMMARY:

BSUM(2)

The present invention relates to one-dimensional image sensors in which the image of a **handwritten**, typewritten or printed original document is converted into a time series electrical signal.

SUMMARY:

BSUM(3)

At . . . transmission of images of ordinary business papers, a typical signal transmitting device is constructed of photoelectric conversion elements such as **PDA**'s (photodiode arrays) or CCD (charge coupled device) image sensors.

SUMMARY:

BSUM(4)

FIG. 1 is a basic circuit diagram of a **PDA** which is commercially available. The **PDA**, as shown in FIG. 1, includes photodiode PD.sub.1, PD.sub.2, . . . and PD.sub.n, MOS FET switches S.sub.1, S.sub.2, . . .

SUMMARY:

BSUM(5)

The operating principle of the **PDA** of FIG. 1 will be briefly described. This discussion applies also to an image sensor according to the invention as described in detail below. FIG. 2 is an equivalent circuit of the **PDA** for a single picture element. An optical switch PD and a pn junction capacitor represent the equivalent circuit of a . . .

SUMMARY:

BSUM(6)

When . . . PD with the switch SW closed, the pn junction capacitor

C.sub.j is charged to a level  $Q=C.sub.j V$ . When the PDA is irradiated by light having a brightness L for a period of time T with the switch SW opened thereafter, . . .

## SUMMARY:

BSUM(7)

The above-described PDA or CCD image sensor is made up of high density picture elements. The array length is typically very short, usually not more than 30 mm. Therefore, a PDA or CCD image sensor cannot be used to read ordinary clerical or business papers without employing a contracting optical system 11 as shown in FIG. 3. Therefore, a conventional PDA or CCD image sensor is necessarily bulky. In FIG. 3, reference numeral 10 designates an integrated image sensor such as a PDA or CCD image sensor and reference numeral 12 an original document.

10 SEP 95 15:37:54

U.S. Patent &amp; Trademark Office

P0027

US PAT NO: 4,365,274 [IMAGE AVAILABLE]

L13: 4 of 4

BSUM(7)

## SUMMARY:

BSUM(12)

A . . . in which optical sensitivity distribution such as for instance complementary for inadequate blue light sensitivity, as is peculiar to a PDA or CCD image sensor, is readily achieved.

## DRAWING DESC:

DRWD(2)

FIG. 1 is an electrical circuit diagram showing the basic circuit constructed of a conventional PDA device;

## DRAWING DESC:

DRWD(3)

FIG. 2 is an equivalent circuit of a single picture element of the PDA;

=&gt;

=&gt; d his

(FILE 'USPAT' ENTERED AT 15:03:41 ON 10 SEP 95)

SET PAGELength 62

SET LINELENGTH 78

L1 4133 S NEWTON  
L2 6156 S APPLE  
L3 2 S L2(P)L1  
L4 128 S HANDWRIT####(6A)NUMBER#  
L5 8009 S APPLE##  
L6 2 S L5(P)L1  
L7 0 S MESSAGEPAD

L8 4149 S RECOGNIZ####(4A)NUMBER#  
L9 1813 S HANDWRT####  
L10 16 S L8(P)L9  
L11 1041 S PDA OR (PERSONAL DIGITAL ASSISTANT)  
L12 2 S L11 NOT PDA  
L13 4 S L9 AND L11

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